



US ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND  
U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT  
AND ENGINEERING CENTER (ARDEC)

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## ***NATO FUZE DOCUMENTS:***

***Where Do They Come From?***

***Where Are We Going??***

***What Do They Mean to You???***

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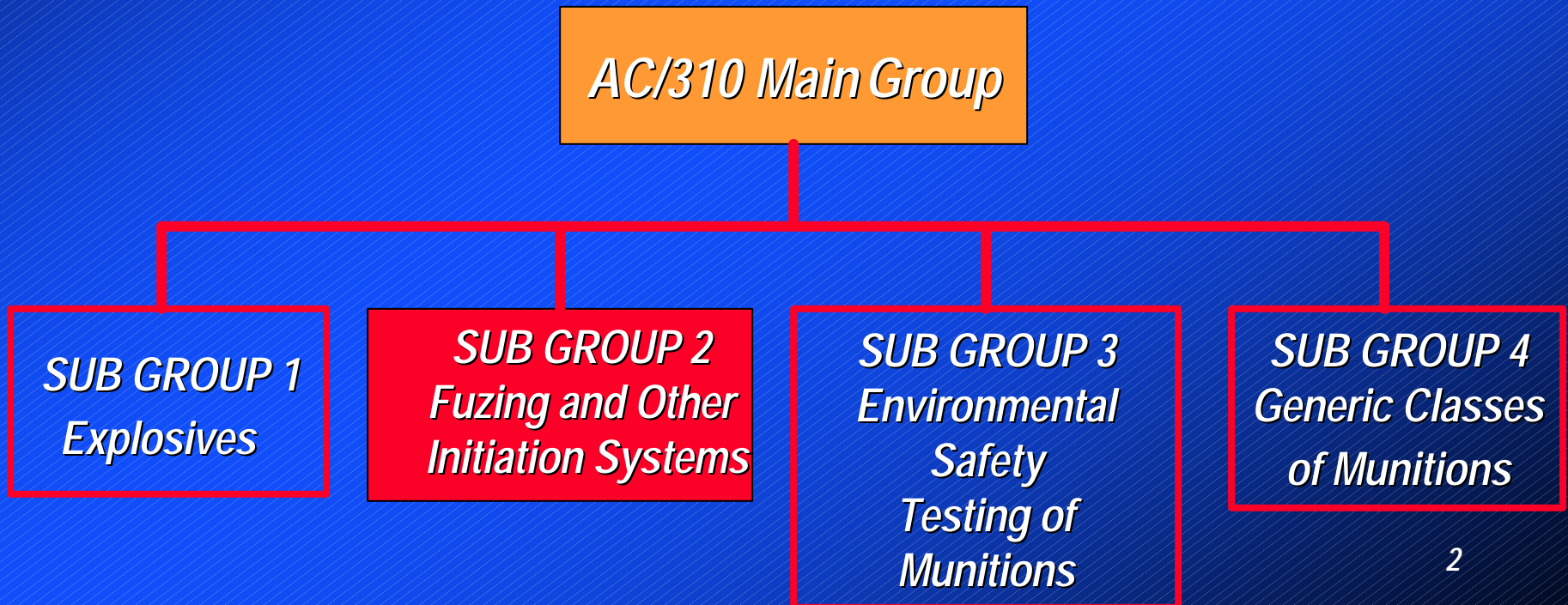
**Homesh Lalbahadur**

FUZE DIVISION, CLOSE COMBAT ARMAMENT CENTER  
46<sup>TH</sup> NDIA FUZE CONFERENCE: 30 April 2002

# ***The NATO Fuze Group***

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**NATO AC/310 Main Group:  
The Group on Safety and Suitability for Service  
(S<sup>3</sup>) for Munitions and Explosives  
(<http://www.nato.int/structur/AC/310/intro.htm>)**



# Types of NATO Fuze Documents

- Standardization Agreement (STANAG):
  - *States NATO **policy** related to the Terms of Reference of the Group*
  - *Ratified by NATO nations (with or without reservations)*
- Allied Ordnance Publication (AOP)
  - *Amplifies and provides **guidance** on that policy*
  - *Approved by AC310 Main Group only*

# ***NATO Fuze STANAGS***

<b>2916</b>	<b>Nose Fuze Contours and Matching Projectile Cavities for Artillery and Mortar Projectiles</b>
<b>4157</b>	<b>Fuzing Systems: Test Requirements for the Assessment of Safety and Suitability for Service</b>
<b>4187</b>	<b>Fuzing Systems: Safety Design Requirements</b>
<b>4326</b>	<b>NATO Fuze Characteristic Data (AOP 8)</b>
<b>4363</b>	<b>Fuzing System - Development Testing for the Assessment of Lead and Booster Explosive Components</b>
<b>4368</b>	<b>Electric and Laser ignition System for Rocket and Guided Missile Motors; Safety Design Requirements</b>
<b>4369</b>	<b>Design Requirement for Inductive Setting of Electronic Projectile Fuzes</b>
<b>4547</b>	<b>DESIGN REQUIREMENTS FOR INDUCTIVE SETTING OF MEDIUM CALIBER ELECTRONIC PROJECTILE FUZES</b>
<b>4560</b>	<b>ELECTRO-EXPLOSIVE DEVICE, ASSESSMENT AND TEST METHODS FOR CHARACTERIZATION</b>
<b>4593</b>	<b>Fuzing Systems - Design Requirements for Inductive Setting of Guidance Data</b>

# *NATO Fuze AOPs*

<b>8</b>	<b>NATO Fuze Characteristics Catalogue</b>
<b>16</b>	<b>Fuzing Systems-Design Guidelines for STANAG 4187</b>
<b>20</b>	<b>Manual of Tests for the Safety Qualification of Fuzing Systems</b>
<b>21</b>	<b>Fuzing Systems: Manual of Development Characterization and Safety Test Methods and Procedures for Lead and Booster Explosive Components</b>
<b>22</b>	<b>Design Criteria and Test Methods for Inductive Setting of Electronic Projectile Fuzes</b>
<b>42</b>	<b>Integrated Design Analysis for Munition Initiation Systems and other Safety Critical Systems</b>
<b>43</b>	<b>Electro-Explosive Devices: Test Methods for Characterization: Guidelines for STANAG 4560</b>



# U.S. Implementation of NATO Fuze Documents

- *WHY: Mandated by DOD*
- *WHEN: (1) It's happening now  
(2) Upon ratification by the US (Does NOT have to be published by NATO)*
- *HOW: The DOD Fuze Engineering Standardization Working Group (FESWG)*
- *WHO: Tony Melita, Office of the Under Secretary of Defense*
- *WHO TO ARGUE WITH: Chris Janow, US Representative to NATO Fuze Group*

# ***DOD FESWG Membership***

H. Lalbahadur
Chairman (ARDEC)

A. Shabazz

Executive Secretary  
(ARDEC)

Army

**A**

**B**

A . Barreiro  
(ARDEC)

B. Dinardo  
(ARDEC)

Navy

**A**

**B**

J. Waller  
(NAWC)

L. Penn  
(NSWC)

Air Force

**A**

**B**

S. Smith  
(WL)

C. Snyder  
(AFMC)

## *Technical Advisors*

F. Chan  
C. Janow  
B. Fishburn  
A. Frydman  
K. Gunn

W. Woessner  
K. McMahon  
S. Hoxha  
D. Gutierrez  
A. Reiter

## *Technical Advisors*

O. Parrent  
C. Diacono  
L. Will  
G. Laib  
L. Forman

D. Riggs  
J. Hahin  
M. Brown  
K. Chirkis  
A. Hayes

## *Technical Advisors*

D. Lacey

P. Parker  
M. Bridge

**A - Departmental Representatives**

**B - STDZN OFC Representatives**

# *FESWG Mission*

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*Serve as the US body for Fuze Engineering Standardization.*

*Duties include:*

- *Establish and Maintain Fuze Engineering Standards*
  - *US Fuze Documents*
  - *NATO Fuze Documents*
- *Review and Standardize New Technology (e.g. MEMS)*
- *Interact with the Munitions Industry*
- *Advise the Safety Boards*



# ***Fuze MIL - STD's & Handbooks***

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MIL-STD-1316	-----	Fuze Design, Safety Criteria for
MIL-STD-331	-----	Fuze and Fuze Components, Environmental and Performance Tests for
MIL-STD-333	-----	Fuze, Projectile and Accessory Contours for Large Caliber Armaments
MIL-HDBK-145	-----	Fuze Catalog - Active Fuzes
MIL-HDBK-146	-----	<b>Fuze</b> Catalog - Limited Standard, Obsolescent Obsolete, Terminated and Cancelled Fuzes
MIL-HDBK-777	-----	Fuze Catalog - Procurement Standard and Development Fuze Explosive Components
MIL-STD-1901	-----	Munition Rocket and Missile Motor Ignition System Design, Safety Criteria for
MIL-STD-1911	-----	Hand - Emplaced Ordnance Design, Safety Criteria for

Quest: How are NATO Fuze Documents Related to US Fuze Documents?

Ans: Please see handout

# *How May I Obtain a NATO Fuze Document?*

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- ASSIST Web Site:
  - <http://astimage.daps.dla.mil/online/>
  - Must also Call 215-697-2179 and request a CAMS account #
- US Rep to the NATO Fuze Group:  
Chris Janow, 1-973-724-5438

NOTES: (1) NATO documents are stamped  
“NATO Unclassified” = US FOUO  
(2) Only documents ratified by the US  
will be available in ASSIST.

# *Conclusions*

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- *Every munition developer and producer is affected.*
- *Promotes common safe designs and practices among NATO nations, Partners for Peace, and other friendly nations.*
- *Promotes international sales*